

## P.W n° 5 : Flower morphology and anatomy of reproductive organs of angiosperms

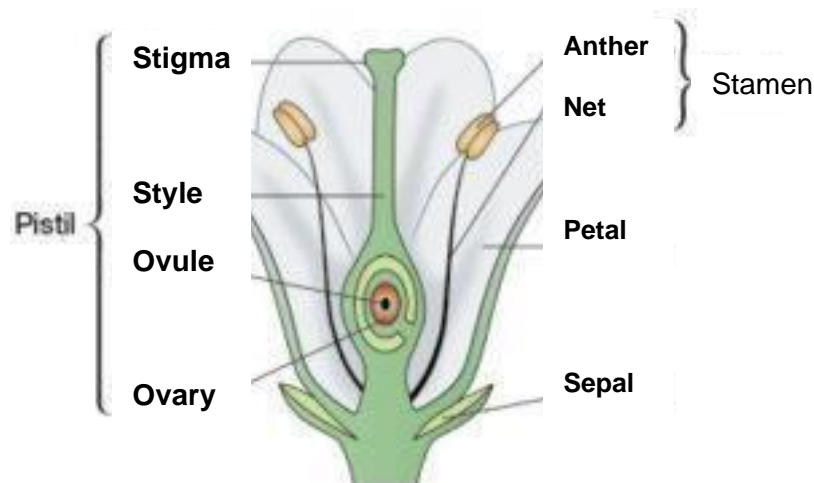
### 1. Introduction

#### 1. The flower

The **flower** of angiosperms is composed of a set of **floral parts** attached to a **floral receptacle**; a **peduncle** inserted on a stem where there is a modified leaf called a **bract**.

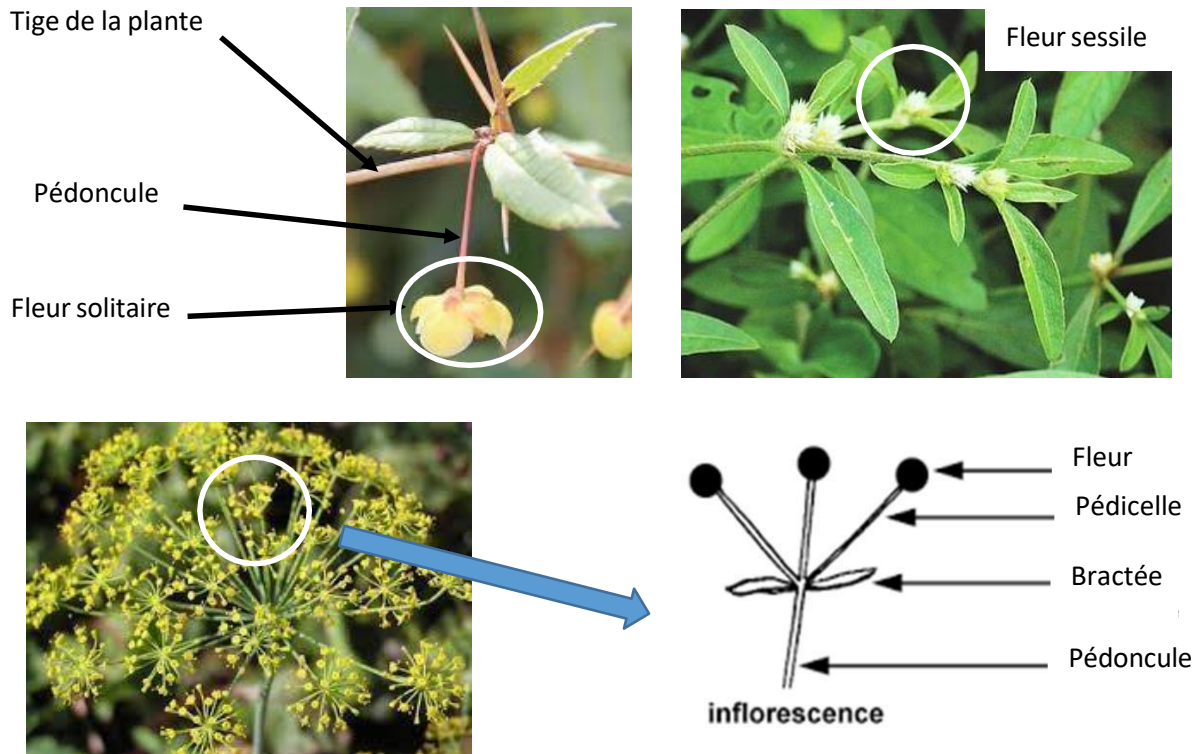
All the floral parts of angiosperms are arranged in 4 whorls (or circles) which are:

- Sterile parts: 1. **The calyx** (all the sepals)  
2. **The corolla** (all the petals)
- Fertile parts: 3. **The androecium** (the set of stamens)  
4. **The gynoecium** (Pistil)



Longitudinal section of an angiosperm flower

Angiosperms are characterized by a very wide variety of **flowers** that can be **individual** or **most often grouped in inflorescences**. **The isolated flower** is formed from a **peduncle**, when **the latter is absent** the flower is called sessile. In an inflorescence, the axis bearing an individual flower is called a '**pedicel**'.



The **bisexual or hermaphrodit flower** has both **male and female** organs. This type of **bisexual flowers** is the most common, although some less evolved angiosperms produce **unisexual flowers**. **Unisexual species** may contain a gynoecium and no androecium (pistillated flowers with sometimes a rudiment of androecium), or an androecium and no gynoecium (staminate flowers with sometimes a rudiment of gynoecium).

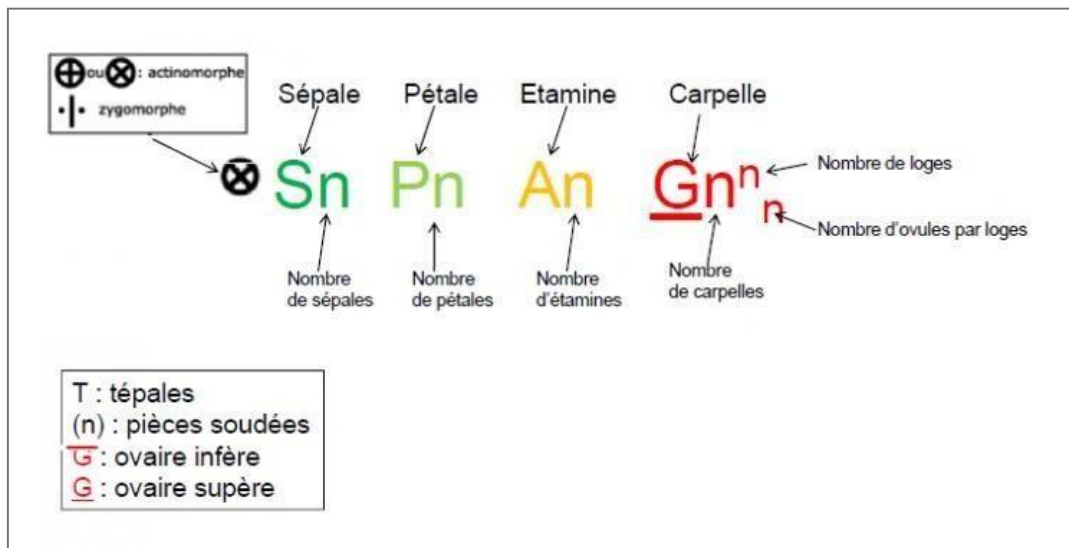
Other types of flowers are **sterile**, meaning they do not have stamens or carpels. This type of **sterile flowers** occupies a well-defined position in some inflorescences.

In the same species, if the male and female flowers are produced on the same individual, the plant is called **monoecious**. If these flowers are produced on different individuals, the plant is called **dioecious**.

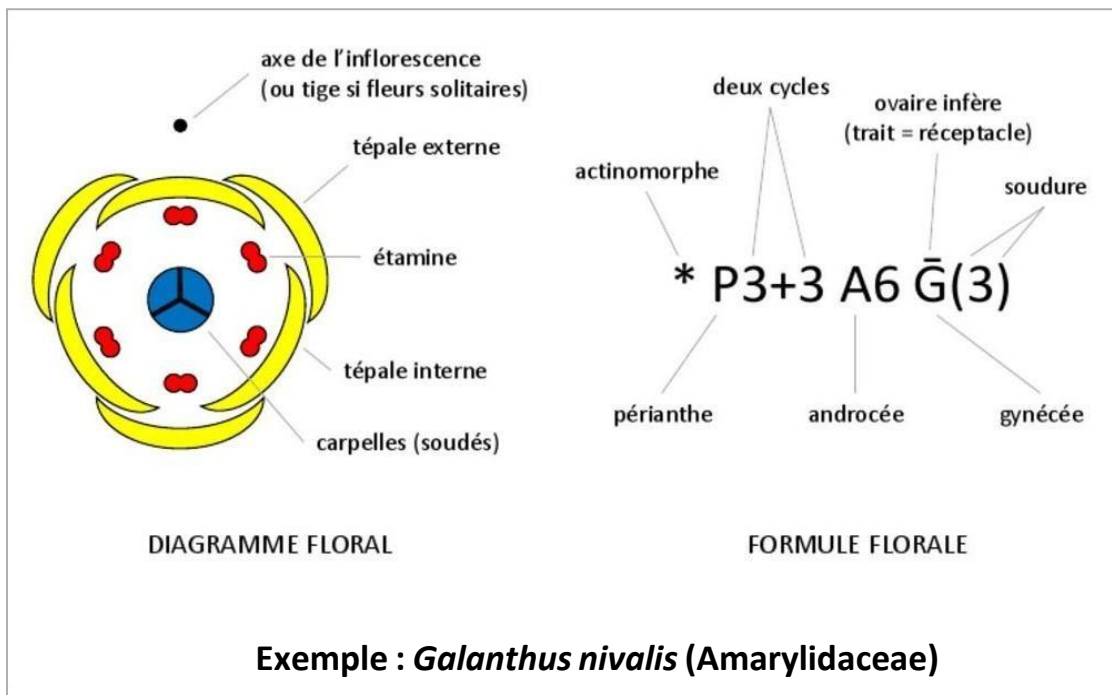
## 1.2. Floral diagram

The floral diagram represents the arrangement of all the floral parts according to a cross-sectional plan.

**B) Floral Formula:**



**Example** of a floral diagram and a floral formula (floral dissection performed on the *Galanthus nivalis* plant)



**2. Objective of the P.W:** Knowledge of the morphology of a hermaphrodite flower and its component organs. As well as, the study of anatomical sections of the reproductive organs (anthers and ovaries).

**3. Plant material used:** Hermaphrodite flowers of an angiosperm plant.

**4. Materials used in the manipulations:** Binocular microscope, scalpel, forceps, prepared posters of the anatomy of the reproductive organs (anthers and ovaries).

### **5. Manipulation**

- Perform a dissection of the flower using a binocular microscope;
- Carefully observe and draw the flower and do caption of the diagram;
- Present the diagram and the floral formula;
- Observe the prepared posters of the anther and ovary and draw and do caption of the cross-section of the two reproductive organs.